TITLE OF THE INVENTION

COMPUTER SYSTEM AND METHOD FOR STORING PRODUCT KEYS

THEREOF

CLAIM OF PRIORITY

[0001] This application makes reference to, incorporates the same herein, and claims all benefits accruing under 35 U.S.C. §119 from an application for *COMPUTER SYSTEM AND METHOD FOR SAVING OF PRODUCT KEY OF THE SAME* earlier filed in the Korean Industrial Property Office on 27 July 2000 and there duly assigned Serial No. 43479/2000.

BACKGROUND OF THE INVENTION

Field of Invention

[0002] The present invention relates to a computer system equipped with an operating system program, and more particularly, to a computer system and a technique for facilitating an installation of programs within the computer system.

Description of the Background Art

[0003] Recently, computer systems have used operating system (OS) programs having multiple functions and a variety of application programs. To provide end users with convenience in using the computer systems, computer manufacturers have launched computer systems installed with some

1   OS programs in hard disk drives thereof, in the markets. For example, the OS programs include

2   WINDOWS 95, WINDOWS 98, WINDOWS 2000 or WINDOWS NT, *etc.* from the Microsoft

3   Corporation, *etc.*

4   **[0004]**   If an electric power is supplied to the computer system by the user, some information of

5   the OS program therein is internally configured in the computer system. Accordingly, the user does

6   not need to install a separate OS program in the computer system at the initial operation stage, to use

7   the computer system. The user is only requested to set up the OS program initially installed in the

8   computer system by its manufacturer, adaptive to the user's computer environment, when the

9   computer system is activated by the power supply.

10   **[0005]**   For example, where WINDOWS 98 OS program is installed on the computer system, if

11   power is supplied to the computer system, components and elements thereof are initiated and a

12   Power-On Self-Test (POST) routine is then conducted. After the computer system is booted up

13   according to the OS program, the OS program is subsequently installed. The user sets up the

14   keyboard configuration according to the language with which he or she intends to use, and inputs

15   his or her name or the company name or both his or her name and the company name through the

16   keyboard.

17   **[0006]**   Then, the computer system displays the Certificate of Authenticity on the screen, in order

18   to certify an authenticity of the product of WINDOWS 98 OS program. The computer system asks

19   the user whether or not to agree to a license of the OS program, and if agreed, directs the user to

20   input the product key of the OS program provided together with the OS program. If the right

1   product key for the installed OS program is inputted, installation of the OS program is continued.

2   If the right product key for the installed OS program is not inputted, installation of the OS program

3   terminates. If these processes are completed, the computer system is rebooted. Then, the user sets

4   up a driver for his or her printer. Once the printer driver is set up, the installation of the OS program

5   is completed.

6   **[0007]**   However, the product key of the WINDOWS 98 OS program includes 25 letters, having

7   a complex structure, for which the user is requested to ascertain whether each letter has been

8   correctly inputted, thereby giving the user an inconvenience. In addition, where the Certificate of

9   Authenticity providing the product key is lost, the WINDOWS 98 OS program cannot be installed

10   again.

11   **[0008]**   To solve these problems, some OS programs such as WINDOWS 95 and WINDOWS 98

12   have their product keys stored in their respective specific areas of the hard disk drives (for example,

13   they are registered in the registry of the system file).

14   **[0009]**   Where the product key is stored in the hard disk drive, the hard disk drive may be damaged

15   due to an attack of a virus program or a mechanical malfunction. Under the circumstances, if the

16   OS program is to be reinstalled, the user has to manually input the product key. In addition, if a new

17   hard disk drive is additionally mounted on the computer system, the user has to directly input the

18   product key for installation of the OS program as in the initial operation stage.

19   **[0010]**   The OS program and application programs need to be reinstalled where the computer

20   system often malfunctions due to mechanical faults of the hard disk drive, an attack of virus

1   programs, critical errors of the OS program in the course of using the computer system, and a user's

2   error, *etc.* To facilitate the re-installation, the manufacturers have supplied the purchasers a CD-

3   ROM (compact disc read-only memory) for restoration. This CD-ROM includes a program to

4   restore the computer system.

5   **[0011]**   If the above-described problems occur, the user can restore the OS program and the

6   application programs to the initial state of the system by means of the restoration program stored in

7   the CD-ROM.

8   **[0012]**   Even when installing the OS program by means of the restoration CD-ROM, the above-

9   described processes should be carried out to reinstall the OS program on the computer system, and

10   therefore, the user has to directly input the product key of the OS program, inconveniencing the user.

11   If the Certificate of Authenticity having the product key is lost, the user has still a difficulty in

12   reinstalling the OS program.

13   **[0013]**   Exemplars of the art are U.S. Patent 5,519,878 issued to Dolin, Jr. for *System for Installing*

14   *and Configuring (Grouping and Node Address Assignment) Household Devices in an Automated*

15   *Environment*, U.S. Patent 5,717,930 issued to Imai, *et al.* for *Installation System*, Japan Patent

16   8087460 issued to Imai, *et al.* for *Installation System*, Korean Patent 1999-48136 issued to Lee *et.*

17   *al.*, for *Computer System having a Function Storing Identification Number and a Method Thereof,*

18   and Japan Patent 9305381 issued to Kondo for *Installation Device for Software, Installation System*

19   *for Software and Installation Method for Software* .

SUMMARY OF THE INVENTION

[0014]   It is therefore an object of the present invention to provide a computer system allowing the product key to certify the authenticity of the product to be automatically inputted when the OS program is reinstalled, thereby making it easier to reinstall the OS program, and a method therefor.

[0015]   Another object of the present invention is to provide a computer system allowing the product key of the OS system to be inputted through a bar code reader and a method therefor.

[0016]   Still another object of the present invention is to provide a computer system storing therein information for product authenticity, where the stored information for product authenticity is read out and automatically inputted into a product key input window, when the OS program is reinstalled.

[0017]   These and other objects of the present invention may be achieved by a provision of a computer system having a CPU (Central Processing Unit), a main memory, a BIOS ROM (basic input/output system read only memory), a display device and an input device, and using an OS program having its product key. The present invention further includes an OS program storage storing the OS program therein, a product key storage storing the product key of the OS program, a product key storage program reading the product key of the OS program stored in the product key storage to be inputted, when a product key of an OS installation program to reinstall the OS program and the product key stored in the product key storage are identical. Information on the product key of the OS installation program can be a bar code-readable signal. The OS installation program is provided with an information input window to allow a user to directly input the product key thereinto, when the product key of the OS installation program and the product key stored in the

1 product key storage are not identical with each other. The product key storage can be accommodated

2 in an extended CMOS RAM (complementary metal-oxide semiconductor random-access memory).

3 The product key storage program can be installed in a hard disk drive storing the OS program and

4 application programs therein.

5 [0018] According to another aspect of the present invention, a method is provided for storing a

6 product key of an OS program in a computer system having a CPU, a main memory, a BIOS ROM,

7 an auxiliary memory storing therein information set up by the BIOS ROM, using the OS program

8 having the product key thereof, including the steps of reading the product key having a bar code by

9 a bar code reader, corresponding to an installation process of the OS program, and storing the

10 product key in a product key storage by activating a product key storage program. The product key

11 storage can be accommodated in an extended CMOS RAM. The product key storage program can

12 be installed in a hard disk drive storing the OS program and application programs therein.

BRIEF DESCRIPTION OF THE DRAWINGS

14 [0019] A more complete appreciation of this invention, and many of the attendant advantages

15 thereof, will be readily apparent as the same becomes better understood by reference to the following

16 detailed description when considered in conjunction with the accompanying drawings in which like

17 reference symbols indicate the same or similar components, wherein:

18 [0020] Fig. 1 is a perspective view schematically showing a computer system having a

19 WINDOWS-type OS program according to the present invention;

1   **[0021]**   Fig. 2 is a block diagram showing a configuration of the computer system of Fig. 1;

2   **[0022]**   Fig. 3 is a block diagram showing a product key storage system, reading the product key

3   of the OS program;

4   **[0023]**   Fig. 4 is a view showing a window display for inputting the product key, displayed at the

5   installation stage of the WINDOWS-type OS program;

6   **[0024]**   Fig. 5 is a flow chart to store the product key at the installation stage of the initial OS

7   program of the computer system according to the present invention; and

8   **[0025]**   Fig. 6 is a flow chart to automatically input the product key by means of the restoration

program at the installation stage of the initial OS program of the computer system according to the

present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0026]   Turning now to the drawings, referring to Figs. 1 and 2, a computer system according to

the present invention includes a main body 10, an input device 60 for inputting an external signal,

and a display device 50 receiving from the main body 10 the input signal inputted through the input

15   device 60 and displaying it out.

16   **[0027]**   The main body 10 is provided with a floppy disk drive 75, a CD-ROM drive 80 and a hard

17   disk drive 70. Within the main body 10 are installed a main board (not shown) on which a CPU 20

18   and a RAM (random access memory) 30 are installed, and a number of hardware units (not shown).

19   **[0028]**   The main board installed within the main body 10 includes a CPU 20, the RAM 30, a

1   BIOS ROM 40 storing a BIOS therein, an extended CMOS RAM 45 storing the product key therein,

2   and a video controller 51 transferring graphic data to the display device 50. The main board further

3   includes an input/output controller 63 controlling the input device 60 having a keyboard 61 and a

4   mouse 62, an integrated drive electronics (IDE) controller 90 which is a standard interface between

5   a data bus and a disk device, and a FDD (floppy disk drive) controller 73 controlling the floppy disk

6   drive 75.

7   [0029]   The BIOS stored in the BIOS ROM 40 reads out or modifies the information stored in the

8   CMOS RAM 45, so as to control the CD-ROM drive 80 for restoration or the hard disk drive 70 to

9   be described later. A CMOS RAM 45 is a low power random access memory that is used to store

10   for example configuration data for the computer and is usually powered by a battery 47 when the

11   computer is turned off.

12   [0030]   The extended CMOS RAM 45 preserves the stored information therein, by means of power

13   supplied thereto from an auxiliary power supply 47 (e.g., battery). The extended CMOS RAM 45

14   also compresses and transforms the product key inputted from a bar code reader 130 so as to be

15   stored therein, under the control of a product key storage program 140 to be described later. The

16   extended CMOS RAM 45 includes input/output address ports (not shown) of standard CMOS RAM

17   for IBM (International Business Machines) personal computer and additional input/output address

18   ports (not shown) together.

19   [0031]   One of the input/output address ports is a region for storing offset data to be written and

20   read from 128 data of the extended CMOS RAM. The data for the offset position written onto this

1 port is written and read through one of the additional input/output address ports.

2 **[0032]** The product key is written onto a specific region of the extended CMOS RAM 45 under

3 the control of the product key storage program 140, and it is read out from the specific region of the

4 RAM under a restoration program 87.

5 **[0033]** The CD-ROM drive 80 includes a boot device, and a CD-ROM 85 for restoring the

6 computer system, to be driven in the CD-ROM drive 80. The CD-ROM includes a restoration

7 program 87 for restoring the computer system. The restoration program 87 allows an OS program

8 71a and application programs to be installed as in the initial state of purchasing the computer system,

9 when the OS program and the application programs stored in the hard disk drive 70 are damaged.

10 **[0034]** The hard disk drive 70 includes a primary hard disk drive 71 as a boot device storing the

11 OS program 71a therein, and a secondary hard disk drive 72 storing the restoration program 87

12 therein. The primary hard disk drive 71 stores a WINDOWS 98 OS program 71a and application

13 programs therein. The secondary hard disk drive 72 copies the restoration program 87 from the

14 restoration CD-ROM 85 and stores it therein, and restores the OS program 71a and the application

15 programs to the initial installation state by the stored restoration program 87. Within the hard disk

16 drive 70 is stored the product key storage program 140 (see Fig. 3).

17 **[0035]** Hereinafter, the present invention will be described in detail with reference to Figs. 2 and

18 3. As shown, the product key storage program 140 according to the present invention receives the

19 product key information inputted from the bar code reader 130 when the OS program 71a is initially

20 installed, and writes it onto a specific memory device (*e.g.*, the CMOS RAM 45). When the OS

1 program 71a is reinstalled in the hard disk drive 71, the restoration program 87 automatically writes

2 the product key written on the memory device onto a product key input display 110.

3 **[0036]** Referring to Fig. 5, the computer system is provided with the OS program installed by its

4 manufacturer. The OS program 71a is initially executed when the computer system first runs, by

5 allowing the CPU 20 to execute the product key storage program 140 pre-stored in the hard disk

6 drive 70.

7 **[0037]** If power is first supplied to the computer system (step S10), a user information is initially

8 registered according to the installation process of the OS program 71a (S20). The product key is

9 inputted through the bar code reader 130 from a bar code 100 of an OS storage media 90, to certify

10 the product authenticity of an OS installation program 150 (S30). The inputted product key is stored

11 in a specific region of the hard disk drive 70, and the OS program 71a installation continues

12 according to the installation process of the OS installation program 150 (S40). Subsequently, the

13 product key storage program 140 to write the product key onto the extended CMOS RAM 45 is

14 activated (S50). The product key inputted through the bar code reader 130 by the product key

15 storage program 140 is written onto the extended CMOS RAM 45 (S60). If the product key is stored

16 in the extended CMOS RAM 45, the product key storage program 140 is then erased to prevent the

17 product key of the OS program from being reentered (S70). Next, the remainders of the OS program

18 71a continues to install until conclusion according to the OS program installation process (S80).

19 **[0038]** Referring to Fig. 6, the OS program 71a and the application programs are restored to the

20 initial installation stage by the restoration program 87 stored in the restoration CD-ROM 85 or the

1 OS program 71a is reinstalled by copying the restoration program onto a new hard disk drive (*e.g.*,

2 the secondary hard disk drive 72).

3 **[0039]** In more detail, if the restoration program 87 is activated (step P10), the product key of the

4 OS program 71a is read out from the extended CMOS RAM 45 (P20). If the product key is read out,

5 a checksum of the specific regions of the extended CMOS RAM 45 is ascertained as to whether the

6 read product key has the right information (P30). A checksum procedure is a technique for

7 determining whether a data stream contains any errors.

8 **[0040]** Then, the read product key from the CMOS RAM 45 and the product key of the OS

9 program 71a to be reinstalled, taken from the restoration program 87, are compared to ascertain

10 whether they are identical (P40). As a result of comparison, if the two product keys are identical,

11 the read product key is inputted into the product key input window 110 to certify the product

12 authenticity (P50). The program is on standby until a certification button is activated for the next

13 process of the OS program 71a.

14 **[0041]** Where it is determined in the step of P40 that the two product keys are not identical, a

15 message to advise the user that the OS program 71a to be reinstalled is not identical to the previous

16 version of the OS program is displayed along with the product key input window 110, so as to allow

17 the user to directly input the product key of the current OS program (P45).

18 **[0042]** According to the above embodiments, it has been described that the product key storage

19 program is stored within the hard disk drive. However, if there is provided a storable and erasable

20 flash memory, the product key storage program can be stored in the flash memory.

[0043]   If the product key of the OS program is read out by the bar code reader and stored in a storage device, the product key can be automatically inputted in the next installation processes by means of the restoration program.

[0044]   As described above, if a restoration program and a product key input program are provided, the product key to certify the product authenticity is automatically inputted when an OS program is to be reinstalled due to damage of an existing hard disk drive or an installation of a new hard disk drive, thereby giving the user a convenient computer environment. Additionally, because the product key of the installed OS program is stored in the CMOS RAM, the OS program can be reinstalled although the certificate of authenticity having the product key is lost.

[0045]   Although the preferred embodiment of the present invention has been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.